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The Question of Balance

In a recent editorial, "Media and Science: Harmless Dioxin, Benign CFCs, and Good Asbestos" (*EHP* 102:10), David P. Rall decries the "mistakes in editorial policy and reporting" in science and medicine, and suggests "balancing controversial views in the same issue and to invite letters and commentary for publication in the same issue" of the journal in which the material is published. He dealt with "serious environmental concerns: dioxin, chlorofluorocarbons (CFCs), and asbestos."

In regard to the dioxin story in particular, Rall quoted from the Fingerhut (*J*) report that "workers exposed to dioxin for more than 2 years and observed for at least 20 years had a 46% greater cancer death rate than expected." This article was accompanied by an editorial which many newspapers quoted at the time of the report, and others did not, as Rall chose not to. The editorial, written by Bailar (*2*), notes that "Results are again equivocal. Parties on both sides of the continuing debate about the regulation of dioxin exposure will no doubt cite this work in support of their positions" (as I am doing, and as Rall did, by not citing the editorial). Bailar continues:

Some cancers were indeed more frequent in an exposed group than among controls, but the differences were for the most part not statistically significant, and the exceptions might be explained by a combination of small, unavoidable biases in the data and the multiple post hoc comparisons. (Examine enough data at the usual 5 percent level of significance and about 1 time in 20 you will find a statistically significant result where there is no real effect.)

The information is there, but depending on the reporter, the newspaper, or the scientist you will inevitably get a different story. Following the Fingerhut article, for example, one newspaper headline read "Chronic Dioxin Exposure ups Cancer Risk," another read "More Research into Dioxin Urged," and still another "The Deadliness of Dioxin Put in Doubt By New Data."

Rall also states that "A 10-year follow-up of those exposed to dioxin after the chemical explosion at Seveso in 1976, published in *Epidemiology* this summer, showed an increase in some cancers" (*3*). I believe Rall might have mentioned, for completeness sake, that the report also indicated that in one group of exposed

individuals, there was a decrease in breast and uterine cancer, as was observed in a very balanced news report from the *New York Times* on 26 October 1993, by Keith Schneider.

More recently, the article by Davis et al. "Decreasing Cardiovascular Disease and Increasing Cancer among Whites in the United States from 1973 through 1987" in the *Journal of the American Medical Association* (*4*), was accompanied by an editorial (*5*) which was in part critical of the work, yet many media reports failed to recognize the criticism of the editorial, while others gave a very balanced report by using both the article and the editorial (in particular Jane Brody of the *New York Times*, 16 February 1994).

These examples indicate that scientific information is readily available, either in the publication itself, or in the now common practice of the concurrent editorial comment, and is more often critical of the publication than not. Concurrent letters to the editors are not necessary. Reporters, in my opinion, have a good understanding of what they read; it is what they choose to report that may be faulted.

For the various media, the old saying applies, namely good news is no news, bad news is good news, except, of course, if you have a bias, and bias is not limited to reporters. We scientists are full of it, too.

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Regarding Bias

I was saddened to read Rall's editorial comment on the paper in *Science* entitled "Asbestos: Scientific Developments and implications for Public Policy" (*1*). He suggested the "industry association" of

some of the authors needs to be explored. I believe he would consider the late Irving Selikoff to be a good friend. D'Agostino and Wilson (2) wrote:

Each of these questions [about asbestos] has elicited heated disagreements, often including personal attacks on motives and integrity. But as the best known authority [Selikoff] on asbestos has stated: "Arguments should be evaluated on their merits and not by reference to the interests of those who make them."

I agree with this, and to my knowledge none of the authors of the *Science* paper have, until this date, departed from this policy. If now any one of us should, after repeated similar aspersions, explode with hurt or outrage, I for one would fully understand. As for my own activities, something of them is in the public domain (3); they are neither hidden from editors nor the subject for any apology.

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Response

In response to Mossman's comments, it is clear that one form of asbestos or other is somewhat more or less potent than other forms. But given the complexities of the many epidemiological studies and the variability of human response, it is impossible to state much more than that. These differences are not likely to have much clinical importance. The Health Effects Institute-Asbestos Research (HEI-AR) report (1,2) seems to agree. HEI-AR was an industry government consortium that organized a

review of asbestos and the potential hazards from asbestos in buildings. I quote from section 6.2.2.5 (p. 6-34):

1. In cohorts of persons exposed occupationally to elevated concentrations of airborne asbestos fibers, the risks of lung cancer and mesothelioma have been observed to increase with extent (level and duration) of exposure.

2. The data do not suffice to define the exposure-risk relations precisely but are consistent with conventional lung cancer increases in proportion to the extent of exposure to asbestos, and the increase in absolute risk of mesothelioma caused by each brief increment of exposure is proportional to the extent of the additional exposure to the 2nd or 3rd power of time thereafter . . .

5. Comparisons among the different cohorts provide evidence that the risk of pleural mesothelioma is appreciably higher with exposure to crocidolite than with exposure to chrysotile or amosite. Peritoneal mesothelioma has almost always been attributed to amosite or crocidolite exposure.

6. The absence of adequate exposure measurements for the cohorts studied to data severely limits the reliability of any quantitative risk assessments that can be made at this time, especially insofar as the risks of low level exposure to fibers of different sizes and types may be concerned.

7. Many of the groups of asbestos workers that have been studied epidemiologically were exposed to more than one type of asbestos, and the data on risks caused by each separate variety are inadequate and inconsistent. The panel therefore calculated average risks for mixed exposures. These are appropriate for the purpose of this report, as some buildings contain more than one type of asbestos.

(Item numbers 3 and 4 were excluded because they deal with smoking and lung cancer and mesothelioma.)

Thus the HEI-AR panel did not find large differences between the types of asbestos and found no evidence of a threshold.

The HEI-AR panel found that the data from *in vivo* and *in vitro* experimental studies "are insufficient to indicate whether there is a significant departure from linearity" (p. 6-75).

Ilgren and Brown (3) are cited as showing a threshold for asbestos: "Epidemiological evidence of the type discussed in this paper can never establish a negative result, so final proof must rest with a greater understanding of the underlying biological mechanisms."

Kohyama and Suzuki (4) have found

many chrysotile fibers in mesotheliomas and pleural plaques. Dement et al. (5) has recently updated his South Carolina cohort. About half are alive, the standardized mortality ratio for lung cancer is 2.24; for all cancer it is 1.46, and two cases of mesothelioma have been seen in this cohort exposed to pure chrysotile. The slope of the exposure-response relationship was one of the highest seen for asbestos exposed cohorts irrespective of fiber type or industry (5). These reports make it clear that chrysotile asbestos is a dangerous carcinogen and that no threshold has been demonstrated.

The question of the abatement of asbestos that is securely in place is not technical. At some future time it, like most man-made structures, will be disturbed. It can be removed under precautions now or it can be left so that some time in the future, with or without proper precautions, it will be disturbed.

In response to Sternberg's comments, he should have additionally pointed out that the decrease in breast cancer was not statistically significant and the decrease in uterine cancer was only one subgroup.

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